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October 2, 1996

By Hand Delivery

William F. Caton
Acting Secretary
Federal Communications Commission
1919 M Street, N.W., Room 222
Washington, D.C. 20054

Re: *September 30, 1996 Public Notice DA 96-1650 (IB Docket No. 95-91; GEN Docket No. 90-357; PP-24; PP-86; PP-87)*

Dear Mr. Caton:

On behalf of Digital Satellite Broadcasting Corporation ("DSBC"), we are writing in response to the Commission's Public Notice of September 30 permitting the filing of new submissions to be forwarded to the peer review panel. This letter and attachments[1] supplement our letter and accompanying statement of Melvin Barmat filed on September 13, 1996 with the Commission. We respectfully request that the Commission forward both this letter and attachments and the September 13 letter and attachments to the peer review panel.

Together, these submissions lead to the inevitable conclusion that CD Radio, Inc.'s proposed DARS system has been ever changing since CD Radio first filed its pioneer's preference request in 1991. Indeed, the peer review panel and the Commission must determine precisely what CD Radio's current proposal is before they can begin to assess CD Radio's claim that it deserves a pioneer's preference. The attached analyses of Messrs. Barmat and Anglin cast severe doubt, however, on whether CD Radio is entitled under any of the various scenarios to a pioneer's preference.

Mr. Barmat's statement amplifies his statement submitted to the Commission on September 13, 1996. In that statement, Mr. Barmat charted CD Radio's proposed system and

[1] Along with this letter we also submit two additional documents: (1) a statement by Melvin Barmat; and (2) a letter from Richard L. Anglin, Jr. As described in our September 13, 1996 letter, Mr. Barmat is a principal in Jansky/Barmat Telecommunications, Inc. Mr. Anglin is a communications attorney, patent litigator and licensed engineer. He is also an equity holder in DSBC.

demonstrated how it has evolved into a system that is remarkably similar to DSBC's -- thus leading to the conclusion that if CD Radio is granted a preference, DSBC must also receive one.

In his statement attached to this letter, Mr. Barmat elaborates on the difficulty faced by the panel and the Commission in determining the precise system configuration for which CD Radio seeks a preference. If, as Mr. Barmat explains, CD Radio's request is based on a system employing spatial (but not frequency) diversity and code division multiplexing ("CDM"), such a request does not deserve a preference in view of prior documented innovations applying these technologies as early as 1988.

Mr. Anglin reaches the same conclusion in his letter by focusing on the patents recently forwarded to the panel at CD Radio's request. As Mr. Anglin explains, far from bolstering CD Radio's pioneer's preference request, the patents militate against it. For example, although one of CD Radio's patents contains claims relating to hemispherical antennas, these antennas are simply a form of micro-strip antennas that have been under development and in use for a considerable amount of time by airlines for the reception of Inmarsat satellite communication.

In addition, CD Radio does not need a pioneer's preference to protect its pioneering technology. Unlike applicants like DSBC that fully disclosed various system plans in their initial applications, CD Radio disclosed to the Commission a TDM plan distinctly different from the CDM plan it now proposes to use. During the same period that it was proposing a TDM-based system at the Commission, CD Radio was seeking patent protection for a CDM system. CD Radio amended its plans at the FCC to evolve to a CDM system *after* it received its patent. By obtaining patent protection, however, CD Radio has eviscerated the need for a pioneer's preference. As Mr. Anglin observes,

> [T]he FCC has made it clear that development and protection of intellectual property does not in and of itself warrant a Pioneer's Preference. Further, one of the purposes underlying the Pioneer's Preference is to protect developers of new technologies and services who are forced to disclose their "invention" to satisfy FCC requirements and are thus barred from seeking patent protection. This is exactly the case here. CD Radio sought patent protection for its CDMA-based systems while disclosing a TDMA system in both its license application and Pioneer's Preference request. Having secured patent protection, it now abandons TDMA for the more effective CDMA. DSBC, on the other hand, fully disclosed its CDMA system at the time it filed its system application. DSBC's only protection is a Pioneer's Preference.

For all of these reasons, CD Radio should not be awarded a pioneer's preference.

We respectfully request that pursuant to the Commission's September 30, 1996 Public Notice, this letter and attachments as well as DSBC's September 13 letter and attachments be forwarded to the peer review panel for their consideration.

Very truly yours,

Diane S. Killory

Cheryl A. Tritt

Counsel for Digital Satellite
Broadcasting Corporation

cc: Chairman Reed Hundt
Commissioner James Quello
Commissioner Rachelle Chong
Commissioner Susan Ness
Donald H. Gips, Chief
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SUPPLEMENT TO STATEMENT REGARDING INPUT INFORMATION FOR THE DARS PIONEER'S PREFERENCE REVIEW

Section 1.402(a) of the Commission's rules requires an entity requesting a pioneer's preference to include with its request either a feasibility demonstration of its proposal or an experimental license (or application) that would verify feasibility on completion of testing. In an attachment to a September 1995 Supplement to its pioneer's preference request ("Supplement"), CD Radio summarized the experimental activities it had undertaken and the results therefrom.

It is difficult, if not impossible, however, to ascertain from the Supplement for which system configuration CD Radio is claiming a pioneer's preference. Nor can one ascertain which system configuration CD Radio claims its testing and experimentation shows to be feasible. At its root, CD Radio's Supplement is devoid of substantive content.

For example, CD Radio states as results of Experiment 3 that "CD Radio's test system replicated all significant technical aspects of its SDARS architecture." Nowhere is there a description, however, of CD Radio's SDARS system or its technical parameters. Clearly, CD Radio used a terrestrial system, given its statement that its experiment "emulated satellite signals." To the contrary, as explained in my September 13 statement, the transmission power in this CD Radio test was more than 50 times the spacecraft power it expects to use.

CD Radio claims that it was able to "verify" the results it obtained terrestrially in its Experiment 5. In that experiment, CD Radio used the National Aeronautics and Space Administration ("NASA") Tracking and Data Relay Satellite ("TDRSS"), which carries an S-band transponder, for "two series of measurements." NASA, however, provided transmission from only one satellite at a time. It is quite unclear how CD Radio can claim to "verify" elements of spatial diversity by using single satellite transmissions, especially when final test results are not provided.

In short, it is not at all clear that CD Radio ever conducted any testing for what would appear to be its current system -- *i.e.*, one that employs spatial diversity (but no frequency diversity), code division multiplex ("CDM") and a renewal of intent to use terrestrial repeaters.

Even assuming CD Radio properly tested such a system, however, it is undeserving of a pioneer's preference because the system is not pioneering. CD Radio cannot, for example, be requesting a pioneer's preference for combining CDM with spatial diversity. As noted in my September 13 statement, that has been part of the Navstar-GPS system design for many years.[1] Indeed, more recently, the "Big LEO" Globalstar application pointed out the advantage of downlink CDM and satellite (*i.e.*, spatial) diversity, yet Globalstar did not seek a pioneer's preference for what was, by then, not an innovation. One of Globalstar's founders had, in fact, referred to the use of spatial diversity technology in a paper submitted at the May 1988 Mobile Satellite

[1] GPS is a military navigation system that today has commercial applications. It has been in existence for many years. *Cf.* Parkinson and Gilbert, *NAVSTAR/GPS: Ten years later,* IEEE Proc., Vol. 71, No. 10 (1983).

Conference at JPL in Pasadena, California,[2] stating that "[u]se of CDMA will allow coherent combining of signals transmitted between a terminal and both (or all) satellites in view."

Nor can CD Radio legitimately base its pioneer's preference claim on the development of an extremely small planar array antenna. The same 1988 MSS Conference mentioned above included a paper describing a small (4 inch square) microstrip antenna for MSS use in automobiles.[3] This reference is further evidence of the prior existence of the small antenna that CD Radio claims to have pioneered.

To repeat the conclusion in my September 13 statement, CD Radio has failed to support its claim for a pioneer's preference.

Melvin Barmat 10/2/96
Melvin Barmat Date

[2] Jacobs, Gilhousen, Weaver (Qualcomm); Renshaw and Murphy (Hughes), *Comparison of CDMA and FDMA for the Mobilstar SM System*, Proceedings of the Mobile Satellite Conference, May 3-5, 1988.
[3] Mayes, Drewniak, Bowen and Gentle, *Simple Low-Profile, Circularly Polarized Arrays*, Proceedings of the Mobile Satellite Conference, May 3-5, 1988.

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October 2, 1996

Mr. Douglas J. Minster, Esq.
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Washington, D.C. 20006-1605

Re: Patents Assigned to CD Radio, Inc. Affecting its Application for a Pioneer's Preference

Ref: (1) United States Patent No. 5,319,673, issued June 7, 1994
(2) United States Patent No. 5,485,485, issued January 16, 1996

Dear Doug:

CD Radio, Inc. ("CD Radio") submitted United States Patent Numbers 5,319,673 and 5,485,485, references (1) and (2) above, to the Pioneer's Preference peer review panel in the satellite and complementary terrestrial digital audio radio service ("DARS") proceeding (IB Docket 95-91; GEN Docket 90-357; PP-24; PP-86; PP-87). You have asked me whether and if so to what extent the above-referenced patents support CD Radio's claim that it is entitled to a Pioneer's Preference "for having developed a technically feasible new service or technology."[1] In addition to the above-reference Patents, I have also reviewed the request for a Pioneer's Preference filed by CD Radio as well as the policies of the Federal Communications Commission ("FCC") for grant of a Pioneer's Preference.

The above-referenced Patents do not bolster CD Radio's Pioneer's Preference Claim. Indeed, as explained below, if anything they militate against the grant of such a Preference. The Patents embody art commonly known in the satellite communications industry for a considerable period of time. The use of modulation methods, spatial diversity, frequency diversity and polarization diversity are techniques that have long been used to handle issues of

[1] *Broadband PCS Recon. Order*, 9 FCC Rcd 7085 at ¶ 17 (1994).

multipath fading and foliage attenuation in both terrestrial and satellite systems. The uniqueness of the above-referenced patents appears to hinge upon the application of these techniques specifically to radio broadcast satellites in geosynchronous orbit ("GEO").[2] Nothing in the above-referenced Patents is "pioneering" measured against the FCC's Pioneer Preference policies.

CD Radio's Patent No. 5,319,673 was filed on April 16, 1993, after all of the DARS applications had been filed and the issues of multipath fading, foliage attenuation, signal polarization and link budget had been articulated in the applications (including DSBC's disclosure of a CDMA-based DARS system) and the comments upon the applications. This Patent, which was issued on June 7, 1994, contains a number of claims for a two-GEO-satellite radio broadcasting system where the signals from each satellite are transmitted with opposite polarization. The apparent purpose of the primary claims is to specifically state methods aimed at satellite transmitter power, improving signal reception at the receiver and reducing foliage attenuation. Additional claims deal with satellite spacing in GEO, polarization diversity, methods of combining signals in receivers, and in particular the use of spread spectrum modulation to achieve Code Division Multiple Access ("CDMA").

One claim is rather interesting because it specifically claims a satellite-based radio broadcast system utilizing a receiver capable of receiving two or more distinctive channels of broadcast information. Although allowed by the USPTO for patent purposes, there is nothing "pioneering" about this claim. Multi-channel Global Positioning Systems ("GPS") receivers do exactly what is claimed here. Further, with the addition of frequency diversity, this claim also encompasses the Russian Glonass System.

Patent No. 5,485,485 is identical to the prior Patent with the addition of disclosures and claims relating to a hemispherical antenna. In fact, the claims are the same as the prior patent and, again, deal with polarization, modulation, GEO satellite separation, and spread spectrum modulation, only adding use of a hemispherical antenna.

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[2] To analyze the above-referenced Patents in detail will require obtaining the patent application "wrappers" from the United States Patent and Trademark Office ("USPTO") as well as reviewing the references cited on the face of each Patent. Obtaining a "wrapper" usually requires seven to ten (7-10) working days if the request is made on an expedited basis, which has been done. Because we only recently received copies of these Patents, however, we have not yet been able to obtain the wrappers and undertake a detailed analysis of the disclosures, specifications and claims of the above-referenced Patents. As a result, I limit my analysis in this letter to those aspects of CD Radio's Patents which can be discerned from the face of the patents.

CD Radio's hemispherical antenna is a form of micro-strip antennae which have been under development for numbers of years. Hemispherical micro-strip antennas have been for some considerable time and are today flying on numerous airlines for the reception of Inmarsat satellite communications. As above, there is no "pioneering" technology in this Patent. The only uniqueness of CD Radio's claims appears to be the adaptation of a particular form of a micro-strip antenna for use in a satellite radio broadcast system.

As you know, the FCC has made it clear that development and protection of intellectual property does not in and of itself warrant a Pioneer's Preference. Further, one of the purposes underlying the Pioneer's Preference is to protect developers of new technologies and services who are forced to disclose their "invention" to satisfy FCC requirements and are thus barred from seeking patent protection. This is exactly the case here. CD Radio sought patent protection for its CDMA-based systems while disclosing a TDMA system in both its license application and Pioneer's Preference request. Having secured patent protection, it now abandons TDMA for the more effective CDMA. DSBC, on the other hand, fully disclosed its CDMA system at the time it filed its system application. DSBC's only protection is a Pioneer's Preference.

Please call me if you have any questions or wish to discuss this matter further.

Very truly yours,

ANGLIN & GIACCHERINI

Richard L. Anglin, Jr.

RLA:mme